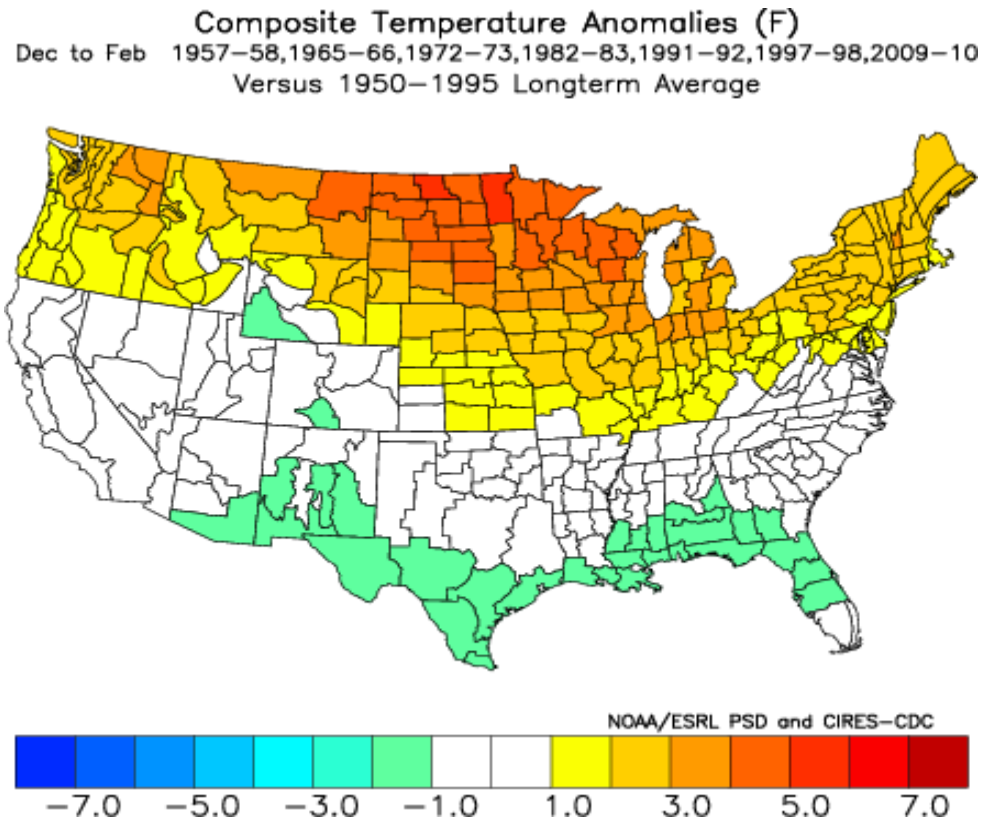
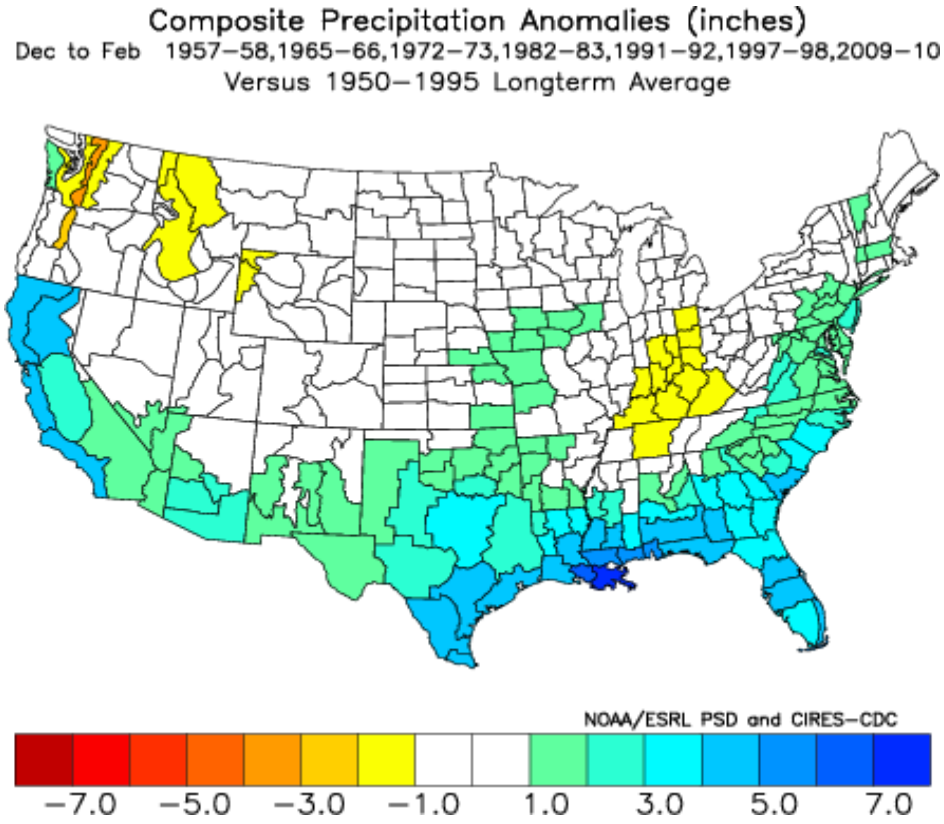
How did El Nino influence this past winter across the Kentuckiana region?

As was forecast last fall, a moderately strong El Nino developed by November of last year and continued through early spring of this year. El Nino (or its converse…La Nina) is the occasional warming (or cooling) of a broad swath of the equatorial Pacific waters from just west of South America through the western Pacific. This alternate warm or cooling of the Pacific Ocean along the equator leads to a repositioning of the mean winter storm track across North America. In brief, the presence of El Nino or La Nina can lead to quite accurate long range winter forecasts for many portions of the country.

So, how did this winter compare to similar winters with El Nino present? The two images below show a composite of how temperatures and precipitation compared to average during a typical El Nino episode. These composites show averaged anomalies for the strongest 7 El Nino episodes since 1950.



December through February.

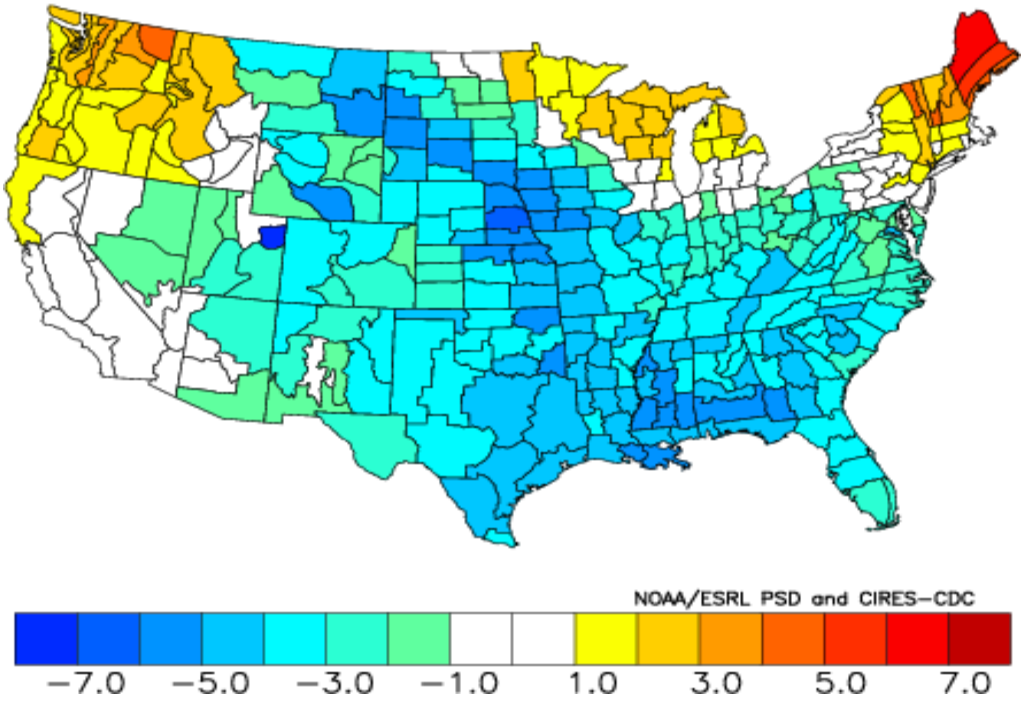


December through February.

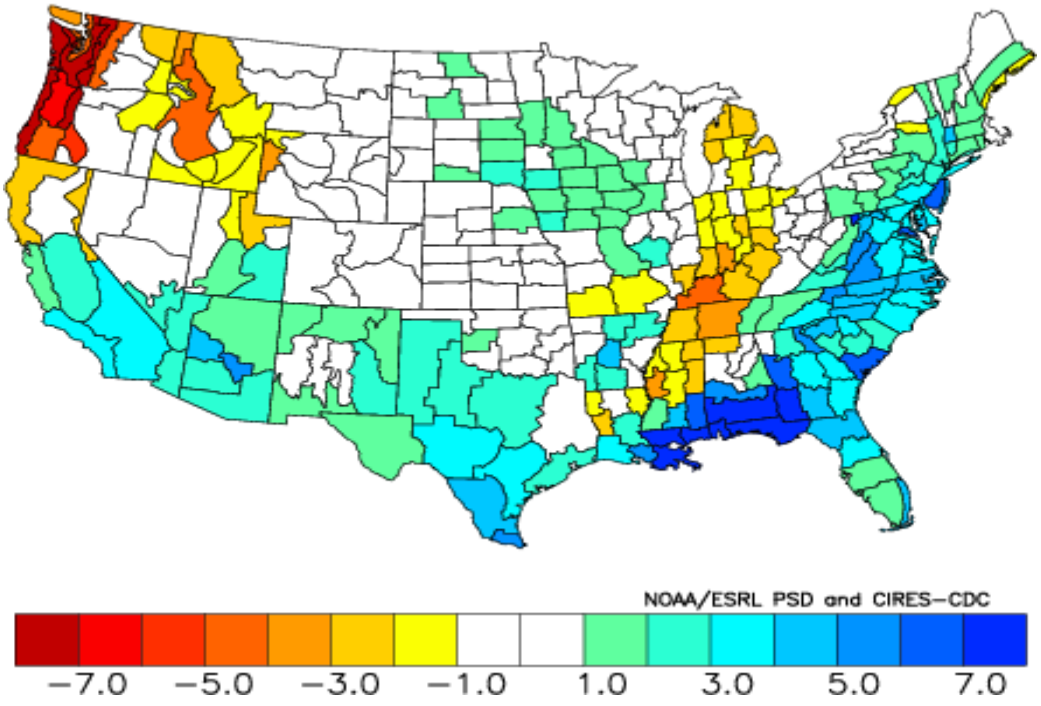
These two images above show that one may expect warmer than normal temperatures across the northern tier of states along Canada's border during a strong El Nino. With the mean storm track displaced southward, wetter than normal and cooler than normal conditions are likely during an El Nino event along our southern tier of states. Note that the composite precipitation map shows drier than normal conditions across the lower Ohio Valley, including Kentucky and Tennessee.

How did temperatures and precipitation play out across the United States this past winter? The two maps below show temperature and precipitation anomalies for the period of December 2009 through February of this year.

Temperature Anomalies (F)
Dec to Feb 2009–10
Versus 1950–1995 Longterm Average



Precipitation Anomalies (inches)
Dec to Feb 2009–10
Versus 1950–1995 Longterm Average

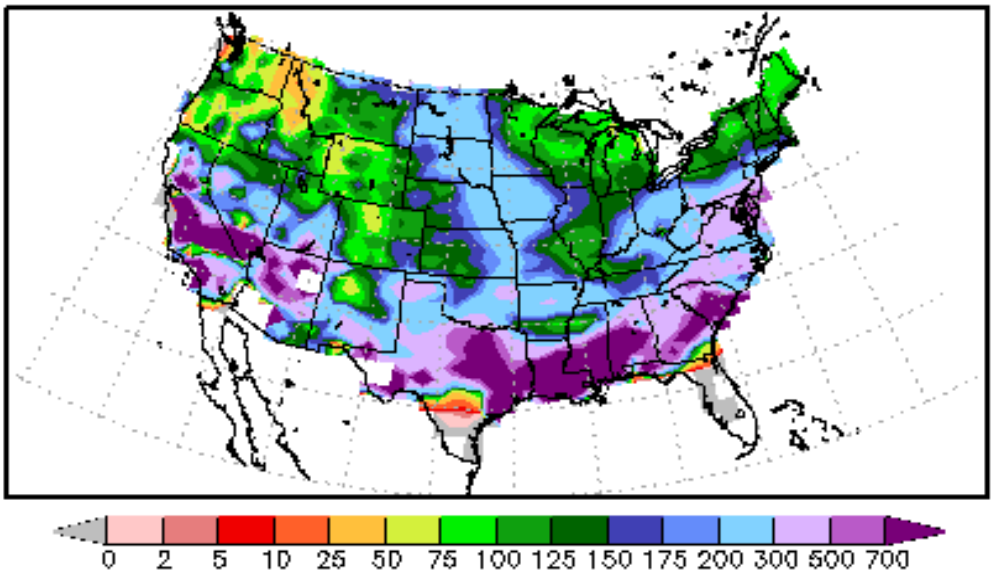


In terms of precipitation, this past winter strongly resembled the composite constructed from the past 7 El Nino winters. In this case, the fall long-range forecasts of wetter than normal conditions across the south and the Mid-Atlantic States verified well. As is typical of El Nino winters, the lower Ohio Valley was dry. Despite all the snow this past winter, locations across Kentucky averaged less than normal precipitation during the 3 month period of December through February.

Temperatures however were a different story. While somewhat resembling a typical El Nino winter with slightly above normal temperatures across our northern states, this winter was cold across much of the lower 48 states. Colder than normal temperatures were recorded across portions of the Central Plains and the Upper Midwest; areas that frequently see warmer than normal temperatures during El Nino winters. In this case, the weather pattern responsible for the colder than normal temperatures across much of the Midwest and the Ohio Valley was not related to El Nino. Across the northern Atlantic, a persistent blocking pattern with high pressure across Greenland and the far northern Atlantic was responsible for repeated polar outbreaks across much of the United States. This blocking pattern is somewhat transitory and is not really able to be forecast more than two weeks in advance.

The combination of a persistent southern storm track and cold air brought repeated snow storms across the southern and the Mid-Atlantic States. Many areas including Oklahoma, northern Texas, eastern Kentucky, and the Washington DC – Baltimore area had near record breaking snows this past winter. Below is a map showing this past winter's snow total compared to normal.

Total Snowfall Percent of Mean
December 1, 2009 to March 1, 2010



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